



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/030,232	04/26/2002	Hye-Jeong Kim	678-777 (P9485)	9211
66547 7590 04/02/2007 THE FARRELL LAW FIRM, P.C. 333 EARLE OVINGTON BOULEVARD SUITE 701 UNIONDALE, NY 11553			EXAMINER CHOU, ALBERT T	
			ART UNIT	PAPER NUMBER
			2616	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		04/02/2007	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

6

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/030,232	KIM, HYE-JEONG	
	<b>Examiner</b>	<b>Art Unit</b>	
	Albert T. Chou	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 February 2007 for the amendment.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2 and 4-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 4-8 is/are allowed.
- 6) ☒ Claim(s) 2 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

***Response to Amendment***

1. The following is a response to the amendment filed on February 22, 2007:
  - Claims 2 and 4-8 are pending in the application.
  - Claims 1 and 3 are canceled.
  - Claim 2 remains rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,953,311 to Davies et al., in view of US Patent No. 6,510,133 to Uesugi and further in view of US Patent No. 5,694,389 to Seki et al.
  - Claims 4-8 are allowed.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,953,311 to Davies et al. (hereinafter "Davies"), in view of US Patent No. 6,510,133 to Uesugi and further in view of US Patent No. 5,694,389 to Seki et al (hereinafter "Seki").

Regarding claim 2, Davies teaches an apparatus for compensating for a frequency offset using a pilot symbol for a transmitter in an OFDM system including a receiver for performing the fine frequency synchronization using a pilot symbol, comprising:

a pilot symbol inserter for receiving a spread data symbol stream and inserting a pilot symbol at intervals of predetermined data symbols **[Fig. 4; Pilot Carrier Inserter ; Pilot carriers are inserted via a Signal Mapper 22; col. 2, lines 55-58];**

a serial-to-parallel (S/P) converter for receiving the pilot symbol-inserted data symbol stream, and outputting N data samples of a symbol unit in parallel **[Fig. 4, Serial-parallel Converter 18];**

an inverse fast Fourier transform (IFFT) section for performing an IFFT operation on the N data samples **[Fig. 4, IFFT];** and

a guard interval inserter for inserting the guard interval between the OFDM symbols **[Fig. 4, Guard Interval Inserter 26].**

However, Davies does not expressly disclose a parallel-serial (P/S) converter for serializing the IFFT-transformed N data samples and outputting an OFDM symbol, and the guard interval inserter copying a part of the data samples of the OFDM symbol and inserting the copied data sample in the front of the OFDM symbol.

Uesugi teaches a parallel-serial (P/S) converter for serializing the IFFT-transformed N data samples and outputting an OFDM symbol **[Fig. 4; IFFT 5 and Parallel-Serial Converter 6]**;

Seki teaches a guard interval inserter in an OFDM transmitting apparatus. The guard interval inserter copies a part of the data samples of the OFDM symbol and inserts the copied data sample in the front of the OFDM symbol **[Fig. 4; Guard Interval Inserting Circuit 209 copies the rear portion of a single OFDM symbol to the front of the symbol as a guard interval; col. 5, lines 66-67, col. 6, line 1]**.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to include a serial-parallel converter before a guard interval inserter as disclosed by Uesugi and a guard inserter which copies a part of the data samples of the OFDM symbol and inserts the copied data sample in the front of the OFDM symbol as disclosed in Seki into Davies' invention.

The motivation would have been to reduce the influence of the inter-symbol and multi-path interference in the OFDM system.

***Allowable Subject Matter***

3. Claims 4-8 are allowed.

***Response to Arguments***

4. Applicant's arguments filed on February 22, 2007, with respect to claim 2, have been fully considered but they are not persuasive.

Applicant argues that the combined reference of Davies, Uesugi and Seki does not teach a guard interval insert for copying a part of the N data samples of the OFDM symbol and inserting the copies data sample in the front of the data sample. Examiner respectfully disagrees with Applicant in this respect.

Examiner maintains the same position of rejection to claim 2 as recited under 35 U.S.C. 103(a) as being unpatentable.

5. Applicant's arguments, filed on February 22, 2007, with respect to claims 5 and 6 have been fully considered and are persuasive. The rejections of claims 5 and 6 have been withdrawn.

***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

Art Unit: 2616

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Albert T. Chou whose telephone number is 571-272-6045. The examiner can normally be reached on 8:30 - 17:00.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi H. Pham, can be reached on 517-272-3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Albert T. Chou

March 26, 2007

Ac

  
CHI PHAM  
SUPERVISORY PATENT EXAMINER

3/29/07